

Arizona.—22d, 26th, 27th, 29th, 30th.
Arkansas.—27th.
California.—2d, 4th, 22d, 23d, 25th, 26th to 31st.
Colorado.—23d, 29th.
Connecticut.—1st, 2d, 31st.
Dakota.—1st, 23d to 27th, 29th.
Delaware.—2d, 3d.
District of Columbia.—1st, 3d, 22d, 27th, 28th.
Florida.—2d, 23d, 26th, 27th, 28th.
Georgia.—2d, 22d, 27th, 29th.
Illinois.—2d, 9th, 22d, 23d, 27th, 29th, 31st.
Indiana.—2d, 3d, 4th, 9th, 13th, 20th, 22d, 25th to 29th.
Iowa.—1st, 2d, 3d, 8th, 24th, 25th, 26th, 28th, 29th.
Kansas.—2d, 18th, 20th, 22d, 26th, 27th, 31st.
Kentucky.—20th, 22d, 26th.
Louisiana.—21st, 28th, 29th.
Maine.—1st, 4th, 5th, 23d, 24th, 27th.
Maryland.—27th.
Massachusetts.—3d, 22th, 27th.
Michigan.—1st to 4th, 7th, 8th, 10th, 22d to 27th, 29th, 30th, 31st.
Minnesota.—2d, 20th, 23d, 26th.
Mississippi.—28th.
Missouri.—2d, 25th.
Montana.—1st.
Nebraska.—1st, 2d, 7th, 21st, 23d, 24th, 26th to 31st.
Nevada.—26th, 27th.
New Jersey.—1st, 9th, 11th.
New Mexico.—22d, 28th.
New York.—1st, 3d to 6th, 9th, 11th, 12th, 21st, 23d, 26th to 29th, 31st.
North Carolina.—4th, 8th, 11st, 22d, 27th, 29th, 30th, 31st.
Ohio.—3d, 4th, 5th, 9th, 11th, 19th, 20th, 22d, 25th, 26th, 28th, 29th.
Oregon.—19th, 23d, 26th, 27th, 30th, 31st.
Pennsylvania.—3d, 25th, 26th.
Rhode Island.—3d, 23d.
South Carolina.—22d, 28th, 29th.
Tennessee.—2d to 5th, 21st, 29th.
Texas.—1st, 7th, 21st, 27th, 28th, 29th.
Utah.—1st, 27th.
Virginia.—1st, 4th, 8th, 9th, 22d, 23d, 27th to 31st.
Washington Territory.—24th, 27th.
Wisconsin.—2d, 23d, 24th, 26th, 27th.
Wyoming.—1st, 22d, 24th, 29th.
 The phases of the moon during January were: full moon 1st, 12.20 a. m., and 30th, 11.13 a. m.; last quarter 7th, 10.31 p. m.; new moon 16th, 3.30 a. m.; first quarter 23d, 8.20 p. m.; perigee 28th, 8.42 p. m.; apogee 13th, 3.42 a. m.

MIRAGE.

Fort Maginnis, Montana, 1st: the whole country to the southeast appeared elevated above the horizon; the banks of the Missouri river, sixty-five miles distant, appearing with distinctness. On the 12th the entire western and southwestern horizon appeared to be elevated above its natural position and many objects not ordinarily visible were plainly seen.

Saint Vincent, Minnesota, 5th: the "Ridge," eighteen miles east of station, was plainly visible. On the 6th it was also visible, though less distinct. On the 7th a fine mirage was observed from 7.30 to 11.10 a. m., Bathgate and Hamilton, seventeen miles distant, and the "Ridge" being plainly visible. A mirage was also seen on the 28th.

The following stations also report mirage:

Vermilion, Dakota, 5th, 6th, 17th, 19th, 20th, 21st.
 Webster, Dakota, 7th, 23d, 29th.
 Genoa, Nebraska, 1st, 7th, 19th, 20th.
 San Francisco, California, 11th.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul

weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from one hundred and fifty-eight stations show 4,881 observations to have been made, of which three were reported doubtful; of the remainder, 4,878, there were 4,235, or 86.8 per cent., followed by the expected weather.

SUN SPOTS.

Professor David P. Todd, director of the Lawrence Observatory, Amherst, Massachusetts, furnishes the following record of sun spots for January, 1885:

Date— Jan., 1885.	No. of new		Disappeared by solar rotation.		Reappeared by solar rotation.		Total No. visible.		Remarks.
	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	
2, 10 a. m.	1	151	0	0	0	0	3	71	
3, 12 m.	0	0	0	0	0	0	4	20	
5, 1 p. m.	0	0	0	0	0	0	4	20	
7, 12 m.	0	0	1	51	0	0	3	101	
13, 11 a. m.	0	0	0	0	0	0	1	51	
14, 12 m.	0	0	0	0	0	0	1	31	
17, 4 p. m.	1	71	0	0	0	0	2	101	
18, 12 m.	1	351	0	0	0	0	2	451	
19, 4 p. m.	0	0	0	0	0	0	2	401	
21, 2 p. m.	0	0	0	0	0	0	6	651	Many of spots very small.
23, 11 a. m.	1	1	0	0	1	1	6	651	Do.
26, 12 m.	0	0	0	0	0	0	7	451	Do.
27, 11 a. m.	0	0	1	51	0	0	6	401	Do.
29, 5 p. m.	1	2	0	0	1	2	5	301	
30, 12 m.	0	0	0	0	0	0	5	201	
31, 12 m.	1	3	0	0	1	3	5	251	

Faculae were seen at the time of every observation. 1 Approximated.
 Note.—75th meridian time is used.

EARTHQUAKES.

Professor C. G. Rockwood, jr., of Princeton, New Jersey, has forwarded the following notes on the earthquakes of January, 1885:

2d: At about 2 a. m. a very light shock, lasting five seconds occurred at Laconia, New Hampshire.

2d: At 9.12 p. m. (eastern time) a slight earthquake shock occurred in Frederick county, Maryland, and Loudon county, Virginia, and adjacent districts. It was most severe in the southern part of Frederick county, and affected an oval area whose boundary just includes Boonesborough and Newmarket, Maryland, Washington, District of Columbia, and Warrenton, Virginia. The noise accompanying the shock was compared to that made by a loaded wagon passing rapidly over frozen ground or over a bridge, to distant thunder, and to the roaring of a chimney on fire. The estimates of the duration of the shock as given by observers, were, as usual, very discordant, varying from two seconds to two minutes. As the tendency of ordinary observers is always to exaggerate this element, the unexpected and exciting nature of the phenomena making the time seem longer than it really is, probably ten or fifteen seconds would be a liberal estimate of the duration.

31st: at 5.05 a. m. low rumbling sounds, like distant thunder, followed by a perceptible trembling of the earth, startled residents of the northern towns of Westchester county, New York.

The following communication, published under the heading of "Letters to the editor," is taken from "Science" of January 30, 1885:

Supposing that reasonably exact determinations of the time and character of seismic phenomena are useful, I send the following note on the shock of January 2d at Washington:

I recognized the character of the shock at the instant of its occurrence and timed it. On the following day, comparing my watch with one set to the standard (not local) time adopted for this city, I found the shock occurred at 9 hours 16 minutes p. m., civil time, to which the correction to the Washington meridian is to be applied. My residence is close to Ascension church, on the highest land away from the boundaries of the city; the grade is ninety-two feet above mean level of the river, and two feet higher than the base of the Capitol. I was in the third story back room, facing east into the back yard, and south into an alley. The house is of brick, and above the middle of the second, story is isolated. The shock was a distinct and very heavy and sudden jar, not accompanied by noise, unless by a slight rattling of the windows, and lasted less than a second. The sensation was as if a very heavy body had struck the earth, yet also as if the jar were partly upward rather than downward. There was no second shock within fifteen minutes, although I saw a paragraph in the daily press to the effect that one individual alleges that he felt a second shock about 11 p. m. at Alexandria, Virginia.

W. H. DALL.

The "Philadelphia Record" of January 17th contained the following:

LEBANON, PA., January 16.—Yesterday morning at ten minutes past four o'clock an earthquake shock was distinctly felt at Shaefferstown. The shock